

REMARKS

This Response is to the final Office Action dated October 6, 2004. Claims 1 to 32 are pending in the present application. Due to a Restriction Requirement, Claims 1 to 9 have been elected and examined and Claims 10 to 32 have been withdrawn from consideration. Claims 1 to 9 stand rejected. The Applicant respectfully requests reconsideration of the rejections for the following reasons.

Claims 1 to 9 were rejected under 35 U.S.C. §103(a) as being obvious in view of WO 97/21230 to Simendinger et al. ("*Simendinger*") in further view of WO 96/02924 to Shrier et al. ("*Shrier*"). The Patent Office primarily relies on *Simendinger* and further relies on *Shrier* to remedy the deficiencies of same.

Of the pending claims at issue, Claim 1 is the sole independent claim. Independent Claim 1 recites a voltage variable substrate. The voltage variable substrate includes a self-supporting, curable insulative binder having an initial non-solid state and a cured solid state, and has conductive particles impregnated into the binder in the non-solid state. The claimed invention provides a VVM that is self-supporting and does not need to be applied to a carrier board. The substrate of the present invention itself provides overvoltage protection, negating the need for a separate overvoltage protection device (See, Specification, page 8, lines 18 to 20).

It is undisputed that *Simendinger* does NOT teach a voltage variable substrate that is self-supporting. The Office Action agrees that *Simendinger* does not disclose a self-supporting VVM (See, Office Action, page 3). The Office Action inquires, however, as to why *Shrier* does not cure the deficiencies of *Simendinger*.

Shrier does not remedy the deficiencies of *Simendinger*. *Shrier* is cited to show a reinforcing layer of insulating material. The Patent Office suggests that the insulating material is impregnated with a VVM. As shown below, the insulating material is NOT impregnated with VVM having conductive particles as called for by Claim 1. Indeed none of the citations to *Shrier* on page 5 of the Office Action supports the finding that the insulating material is impregnated with a VVM containing conductive particles. For example, pages 8 and 9 of *Shrier* deal only with insulative materials, and which are specifically taught NOT to have conductive materials as called for in Claim 1 of the present invention.

Moreover, the Office Action admits that "*Shrier* did not disclose the free self-supporting VVM substrate discretely" (See, Office Action, page 6), and continues to state that this property

would merely be obvious (See, Office Action, page 6, further citing WO 99/24992 to *Rector*). Stated simply, the self-supporting feature of the claimed invention does not appear in the art of record. The only tenable argument for obviousness is that the feature is inherent, but clearly the feature is NOT inherent, a finding which is supported by the fact that each reference cited by the Patent Office does NOT (i) disclose a VVM that is self-supporting or (ii) provide any hint that such a feature would be feasible or desirable.

The “neat” layer 12 of *Shrier* does not include conductive particles as called for by Claim 1. The term “neat dielectric polymer, glass or ceramic” is defined in *Shrier* as “a material which can act as a dielectric or insulating material and which is unfilled, i.e., does NOT contain conductive or semiconductive particles such as those typically used in binders or otherwise associated with variable voltage materials” (See, *Shrier*, page 7, lines 20 to 27, emphasis added). Instead, the layer of “neat” dielectric polymer, glass or ceramic layer is coupled with a layer of voltage variable material (See, *Shrier*, page 12, lines 7 to 22 and Fig. 2). The “neat” layer is in contact with the VVM having conductive particles, not impregnated within it (See, *Shrier*, page 11, lines 14 to 30).

The “neat” layer 12 is not taught to be self-supporting. To the contrary, the Summary of *Shrier* states that for the “neat” layer to be effective, it must be sufficiently thin (See, *Shrier*, page 3, line 27). Various thicknesses for the “neat” layer are specified, for example, at pages 4, 7, 9, 10, 14 and 15 of *Shrier*. Each of the thicknesses is less than a tenth of a millimeter, with many being less than .05 millimeter. Such thicknesses would indicate that the “neat” layer is not self-supporting and is provided instead in a device or on a suitable supporting substrate.

For the first time, the Patent Office at Page 4 asserts that *Shrier* teaches that any VVM material known in the art could be used in making the VVM substrate, and that the VVM substrate can be made via a variety of methods. This ground is repeated again for the first time in the *Shrier* / *Rector* rejection (Office Action at pages 5 and 6). Applicant respectfully submits that the cited page 12, lines 1 to 21 of *Shrier* discusses the structure of the VVM layer 13, not the “neat” layer 12. Again, Applicant points to page 12, line 16 where *Shrier* discusses coupling the “neat” layer with the VVM layer. There is no suggestion that either layer is self-supporting or that the layers can be combined into a single layer even assuming that the “neat” layer 12 is self-supporting.

Also for the first time, the Patent Office at Page 4 asserts that *Shrier* renders Claim 1 obvious because *Shrier* discloses the same materials and processes disclosed in the present invention. The Office Action continues by characterizing Claim 1 as a product-by-process claim, citing *In re Garnero* and *In re Best*. This ground is repeated again for the first time in the *Shrier / Rector* rejection (Office Action at page 5). Applicant respectfully submits that Claim 1 is drawn to a patentable apparatus, which includes a self-supporting binder and conductive particles impregnated into the binder. That apparatus, as discussed at length herein, is not taught or suggested by *Simendinger*, *Shrier* and *Rector*. The fact that Claim 1 specifies that the conductive particles are impregnated into the binder while in a non-cured state does not change or overcome the deficiencies of the art in teaching or suggesting the resulting claimed structure.

The Office Action at Page 4 also asserts for the first time that *Shrier* is “suggestive” of adding well known fillers of *Simendinger*. First, as discussed above *Shrier* expressly states that the “neat” material is NOT supposed to have conductive or semiconductive fillers. Second, the Office Action cites no disclosure in *Shrier* to support the claim that *Shrier* is “suggestive” of adding the well known fillers of *Simendinger*. Third, the proposition that *Shrier* is “suggestive” of adding the well known fillers of *Simendinger* is raised for the first time in this final Office Action, which improperly denies Applicant the ability to respond to the Patent Office should the Patent Office disagree with Applicant’s argument.

The new grounds for rejection set forth on Page 4 have not been necessitated by: (i) Applicant’s amendment or (ii) prior art submitted in an information disclosure statement filed between non-final and final office actions (37 C.F.R. § 1.97(c)). Accordingly, under MPEP 706.07(a) the finality of this Office Action should be withdrawn.

For each of the above reasons, *Simendinger* and *Shrier* do not disclose or suggest a self-supporting VVM material substrate, and provide no hint that such a feature would be feasible or desirable. The prior art does not make out a prima-facie case of obviousness because the references in combination do not teach each of the elements of Claim 1. As stated above, the Patent Office admits that the cited references do not disclose a free, self-supporting VVM substrate. And, there is no support in the references for an argument that such a feature is inherent. Accordingly, Applicant respectfully requests that the obviousness rejection of Claim 1 in view of *Simendinger* and *Shrier* be withdrawn.

Claims 1 to 3 and 9 were rejected under 35 U.S.C. §103(a) as being obvious in view of *Shrier* and in further view of WO/0051152 to Rector et al. ("*Rector*"). This rejection primarily relies on *Shrier* and uses *Rector* to remedy the deficiencies of *Shrier*. Applicant respectfully disagrees with this rejection for the following reasons.

As stated above, the Office Action admits that *Shrier* does not "discretely" disclose a free, self-supporting VVM (See, Office Action, page 6). The Office Action again points to the "reinforcement by the fabric/tape/mesh/fiber/mat" of the "neat" layer of *Shrier*. As discussed above: (i) the "neat" layer is expressly taught not to have conductive particles; (ii) there is no suggestion that the "neat" layer is self-supporting; and (iii) the thicknesses designated for the "neat" layer would indicate that the layer is not self-supporting. The Office Action asserts that because *Rector* discloses a device with voltage variable material that may be applied to the surface of a sheet of FR-4 epoxy or polyimide substrate, that it would be obvious to arrive at the claimed invention. It is that additional epoxy or substrate, however, that the VVM substrate of the present invention can avoid advantageously.

In describing one process of manufacturing the ESD devices, *Rector* begins with an FR-4 epoxy sheet substrate, then "a voltage variable material 143 is dispersed on the substrate 110 in the gap region 140" (*Rector*, page 16, lines 10 to 19, emphasis added). It is apparent that if the VVM needs to be applied to a preexisting substrate, it is not self supporting. Not only does *Rector* fail to provide any suggestion or motivation to arrive at the claimed invention, the reference goes further to teach away from the claim invention, that is, to teach that the VVM needs to be applied to a supporting sheet (See citation to *Rector* above). Moreover, as with the combination of *Simendinger* and *Shrier*, the combination of *Rector* and *Shrier* fails to provide any hint or suggestion as to: (i) why a self-supporting VVM would be advantageous or (ii) how a self-supporting VVM would be feasible.

The Office Action's argument appears to be one of reconstruction, in which it is recognized that (i) VVM's are known and (ii) self-supporting substrates are known. The reconstruction occurs when, viewing the prior art after having learned Applicant's invention, it is concluded that it would simply be obvious to combine a VVM into a self-supporting substrate. The questions that this conclusion invokes, however, are: (i) why is there no suggestion in the art that such combination is desirable; and (ii) even if its desirability is suggested, where can any suggestion that such combination would be feasible be found? Because no suggestion of

desirability or feasibility exists, Applicant respectfully submits that *Shrier* and *Rector* fail to render obvious Claims 1 to 3 and 9.

Because Claim 1 is non-obvious in view of *Simendinger* and *Shrier* and *Shrier* and *Rector*, Claims 2 to 9 depending from Claim 1 are also non-obvious and patentable over those combinations. It is also noted that various dependent claims specify features that are not taught or suggested by the combinations of *Simendinger*, *Shrier* and *Rector*, for example, at least Claims 4 to 11.

In light of the foregoing discussion, Applicant respectfully submits that the present application is in condition for allowance and earnestly solicits reconsideration of same. If the Examiner has any questions regarding this Response, Applicant respectfully requests that Applicant's attorney listed below be contacted.

Respectfully submitted,

BELL, BOYD & LLOYD LLC

BY 

Robert W. Connors
Reg. No. 46,639
P.O. Box 1135
Chicago, Illinois 60690-1135
Phone: (312) 807-4214

Dated: January 6, 2005